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400227

November 21, 1960

Dr. I. E. Wallen  
Aquatic Biologist  
Environmental Sciences Branch  
Division of Biology and Medicine  
U. S. Atomic Energy Commission  
Washington 25, D. C.

Dear Gene:

The composition of and results of radiochemical analyses of twenty-four hour rations of nine adult males at Rongelap Island in September 1959 are given in the attached tables. Determinations of  $\text{Co}^{60}$ ,  $\text{Zn}^{65}$ ,  $\text{Cs}^{137}$ , and  $\text{Mn}^{54}$  were made by gamma ray spectroscopy using a three inch solid sodium iodide crystal in conjunction with a 256 channel analyzer.  $\text{Sr}^{90}$  analyses were done by a combination of nitric acid precipitation and ion exchange procedures. Counting of the  $\text{Y}^{90}$  daughter was with a low level beta counter having a background of less than 1 c/m and an efficiency of 48%. Potassium determinations were made by flame spectrometry. Calcium analyses were made by a permanganate titration method and confirmed by flame spectrometry using an internal standard technique.

As was pointed out in a letter from Held to Seymour on September 13, 1958, caution must be used in collecting such daily rations to be reasonably sure that they are a true representation. Misunderstanding and a misguided desire to please on the part of some individual Rongelapese can easily lead to merely a collection of miscellaneous food items rather than actual daily rations of prepared food. Niel Morriss, Trust Territory Resident Agriculturalist at Rongelap Atoll, and Bwio Soap, former village secretary were invaluable in assisting in the collection of these samples. It was felt that a few samples which were witnessed to be composed of the items and portions actually being consumed were preferable to many samples of uncertain origin. Consequently, some samples proffered by individuals were discarded.

In spite of the care used there are obvious discrepancies. Sample #3, for example, appears to be ridiculously low in total amount of food consumed.

There can be little doubt that there must have been some "snacking" for which there is no accounting.

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The eating habits of the Rongelapese are irregular and it was impractical to follow each individual around throughout the day. Therefore, all of these samples should probably be considered as erring toward the low side for total consumption. However, there does appear to be a reasonable agreement with quantities listed by Murai (Nutrition Study in Micronesia, Atoll Research Bulletin, No. 27, 1953) from a study at Majuro Atoll. Catala (Report on the Gilbert Islands: Some Aspects of Human Ecology, Atoll Research Bulletin, No. 59, 1957) has pointed out the difficulties of obtaining quantitative data in these areas.

Dr. Chakravarti, who has been responsible for the chemical analyses, expects to complete further analyses on these samples in the near future. It is hoped that he will have a report ready for publication early next year.

Sincerely,



Edward E. Held  
Research Associate Professor

EEH:srl

P.S. Aliquots of the ash of these samples have been sent to Dr. Stanton Conn at Brookhaven for interlaboratory check.

Composition of Food Rations Collected  
at Rongelap Island September, 1959.  
(Each sample is a 24 hr. ration)

Sample number	Contributor	Description of food items	Wet wt. grams	Total wt.dry
1	Berberin	a) Pandanus paste, boiled rice and baked fish(mixed)	253	374.68
		b) Partly baked bread dough with bully beef	252	
		c) Bully beef sandwiches	195	
2	Paul	a) Coconut meat (green)	30	175.85
		b) Pandanus "pie"	16	
		c) Baked fish	23	
		d) Sardines, canned	20	
		e) Boiled rice w/coconut milk	249	
3	No name	a) Breadfruit, baked	41	97.12
		b) Coconut and bread dough, baked	24	
		c) Bread	31	
		d) Bully beef	17	
		e) Ship's biscuit	13	
		f) Rice w/coconut milk, boiled	49	
4	Bwio	a) Coconut, ripe	72	321.69
		b) 1/2 Papaya	57	
		c) Rice and fish (mixed)	306	
		d) Bread, local (coconut milk, not saved)	81	
5	Atha	a) Rice and Fish mixed	243	203.16
		b) Bread, local	80	
		c) Rice	197	

Rpngelap food samples (continued)

Sample number	Contributor	Description of food items	Wet wt. grams	Total wt.dry
6	Mellelon	a) Breadfruit, baked	203	484.10
		b) Coconut w/baked dough	203	
		c) Fish, baked	126	
		d) Bread, local	75	
		e) Coconut, entire	50	
		f) Rice, boiled	291	
		g) Sardines, canned	154	
7	Menana	a) Pandanus Keys, raw	115	314.90
		b) Goatfish, baked	26	
		c) Sardines, canned	101	
		d) Rice, boiled	721	
8	Lisie	a) Fish, baked	155	440.50
		b) Bread, local	145	
		c) Bully beef	66	
		d) Sardines, canned	94	
		e) Rice, boiled	622	
9	Kaser	a) Rice and fish mixed	421	262.30
		b) Rice and fish mixed	64	

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Collected at Rongelap Island, September 1959.

981.1

than, or not different than background  
b). The average appearance is about 1/40 to

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Radioisotopes in Food Rations Collected at  
Rongelap Island, September, 1959.

Sample number	<u>Co60</u>		<u>Zn65</u>		<u>Mn54</u>		<u>Cs137</u>		<u>Sr90</u>	
	d/m/g	counting error 95%	d/m/g	counting error 95%	d/m/g	counting error 95%	d/m/g	counting error 95%	d/m/g	counting error 95%
1	0.35	0.12	0.40	0.29	-0.04	0.09	61.4	0.60	0.84	0.07
2	0.52	0.25	-1.03	0.53	0.11	0.20	14.1	0.50	1.63	0.16
3	0.12	0.52	-2.40	1.0	-0.49	0.39	21.1	0.87	1.25	0.25
4	0.23	0.13	-0.76	0.28	-0.07	0.10	17.6	0.38	0.43	0.06
5	0.43	0.22	-0.67	0.45	-0.11	0.16	3.6	0.28	0.21	0.09
6	0.90	0.13	1.70	0.30	-0.23	0.09	16.1	0.29	0.66	0.06
7	0.56	0.14	0.87	0.35	-0.19	0.10	20.0	0.38	0.86	0.08
8	1.20	0.15	2.50	0.41	-0.21	0.11	3.0	0.17	0.22	0.05
9	0.33	0.16	0.05	0.36	-0.003	0.13	2.6	0.21	0.32	0.08

BATE NUMBER

5002244

NOT USED